REMARKS

Claims 1 to 26 are pending in this application. The Examiner has rejected all claims as indefinite and claims 1 to 8, 11, 13 to 20 and 23 to 26 as obvious. Claims 14, 15, 16 and 25 have been amended herein to replace "IR" with "infrared" as required by Mr. Hamlin. Claims 1 and 14 have been amended to clarify that the elements are blended. Support for this amendment can be found in the specification, for example, on page 4, lines 8-9, and on page 7, lines 1-5. In addition, the title of the invention has been amended to specify an "Electric-Arc Flash Resistant Composition." Support for this amendment can be found in the specification, for example, on page 2, lines 10-13, where protection is afforded by blocking electromagnetic waves in the optical or infrared ranges and protection from the energy or radiation from an electric arc. Accordingly, no new matter is introduced by the amendment and Applicants respectfully request that the amendment be entered.

Rejections Under 35 U.S.C. §112

Claims 1 to 26 have been rejected under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim that which Applicants regard as the invention. Applicants respectfully traverse this ground of rejection.

The Examiner has found that in claims 1 and 14, the structural relationship of the elements is not clear. For example, the Examiner questions whether the material is a layer, if the entire substrate is coated, if the product is coated particles, or if the substrate particles are contained within a dye.

Applicants submit that the structural relationship of the elements of the claims is clear and definite as written, especially in light of the disclosure in the specification that the substrate and dye are blended. For example, on page 4, lines 8-9, it states that the "dye is blended with a substrate material." On page 7, lines 1-2, it states that the "composition described above is processed into products by blending the ingredients together and subjecting the blend to curing conditions." Accordingly, it is clear and definite that the first dye and the substrate are blended together and therefore, claims 1 and 14 as written are clear and definite. However, solely in order to further prosecution in this regard, Applicants have amended claims 1 and 14 to further specify blending.

In addition, the Examiner requests that references to "IR" be changed to "infrared" throughout the claims. Applicants have amended claims 14 to 16 and 25 accordingly.

Finally, the Examiner takes the position that any opaque or non-transparent dye or paint that ablates electrical energy would inherently block electromagnetic waves. The Examiner requests clarification on whether the composition is transparent and colorless. Applicants submit that it is incorrect to assume that any opaque or non-transparent dye or paint that ablates electrical energy would inherently block electromagnetic waves. Even so, if the dye is opaque or non-transparent, it would not impart the same advantages as Applicants' invention of being substantially transparent. Clearly, the specification provides that the composition is transparent, or substantially transparent so as to allow the passage of a sufficient amount of light to allow a person looking through the material to view objects under normal working conditions. (See for example, page 3, lines 17-19, and page 4, line 5-6). Also, clearly the composition may be colored. For example, on

page 4; lines 9-14, the specification provides that the optical pigment is preferably substantially orange. Accordingly, no clarification in the claims is needed in this respect.

In view of the above, Applicants submit that the claims are clear and definite and respectfully requests that the rejection be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 1 to 8, 11, 13 to 20 and 23 to 26 have been rejected under 35 U.S.C. §103(a) as obvious over U.S. patent 4,631,214 to Hasegawa. Applicants respectfully traverse this ground of rejection. Applicants note that claims 9, 10, 12, 21 and 22 have not been rejected over any prior art.

The present invention is directed to a composition that is resistant to electric-arc energy and is at least partially transparent. In one embodiment, the invention is a composition comprising at least one dye that blocks electromagnetic waves in the optical or infrared regions, or both, and a substrate material. The proportion of the blend is such that the composition ablates upon impact with the electric arc energy. Therefore, the present invention allows electric arc energy to be dissipated safely. For example, when molded into a face shield, the shield is substantially transparent. However, upon the close occurrence of an electric arc discharge, the shield actually ablates, becomes less transparent or even opaque, and dissipates the harmful energy that otherwise would be directed at the user's face. As the ablation continues, the shield actually becomes more opaque to the electric arc. One particular advantage of the invention is that the shield

retains its basic integrity after ablation so that a protective barrier remains in front of the user's face, allowing time to remove himself from the area of danger.

In Hasegawa, by contrast, no ablation of the material is disclosed or suggested. Instead, metal-coated fiber gauze (5) is used as an electroconductive net between the two transparent resin plates. Upon impact with electromagnetic energy gauze (5) increases in temperature with a potential risk of blowing the structure apart. Obviously, this is not a desirable characteristic for a face shield. Therefore, Hasegawa is actually conductive of electric arc energy itself.

This necessitates mentioning an important distinction between the energy generated by an electric arc at a distance and the electric arc itself. The present invention is directed to preventing harm caused by the energy from an electric arc at a distance, or a flash. For example, the invention first blocks the harmful portion of the electromagnetic spectrum, while almost simultaneously absorbing electric arc energy by ablation. (See, for example, page 6, lines 15-18). Consequently, the title of the invention and claim 14 have been amended herein to reflect this important distinction.

Therefore, it would not have been obvious to one of ordinary skill in the art to make the claimed invention in view of Hasegawa since Hasegawa actually deals with electromagnetic shielding using a potentially explosive material. The present invention dissipates energy generated by an electric arc flash by ablation of the composition in a relatively safe manner. Accordingly, Applicants respectfully submit that the claimed invention is not obvious in view of Hasegawa and request that the rejection be withdrawn.

Prior Art Considered But Not Relied Upon

Applicants have reviewed the prior art considered but not relied upon and agree with the Examiner that they are no more pertinent to Applicants' invention than the art relied upon in the Official Action.

CONCLUSION

In view of the foregoing amendment and arguments, Applicants believe that all pending claims in this application are patentable over the cited art and that all other objections and rejections are obviated by this amendment. Accordingly, favorable reconsideration and early allowance of the application are hereby requested. Should any issues remain unsolved, Mr. Hamlin is invited to telephone the undersigned attorney.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A composition comprising:

a first dye that blocks electromagnetic waves in at least one of the following regions: visible and infrared; and

a substrate material, the substrate material and the first dye being chosen and [proportioned] blended in proportion so that the composition ablates upon impact of electric energy.

14. (Amended) A composition resistant to an electric-arc comprising:

an [IR] infrared/optical dye; and

a substrate material, the [IR] infrared/optical dye and substrate material being chosen and [proportioned] blended in proportion so that the composition blocks electromagnetic waves and ablates when struck by radiation from an electric [arcs] arc.

15. (Amended) The composition according to claim 14, wherein the [IR] infrared/optical dye is selected from at least one of the group consisting of optical dyes and infrared dyes.

16. (Amended) The composition according to claim 14, wherein the [IR] infrared/optical dye is substantially orange.

25. (Amended) A process for producing an electric-arc resistant composition comprising:

blending an [IR] infrared/optical dye with a substrate material; and

subjecting the blend to curing conditions.